Future Market Trends i Western Agriculture: Strategic Implications

Western Plant Health Association
2011 Annual Meeting
Scottsdale, AZ

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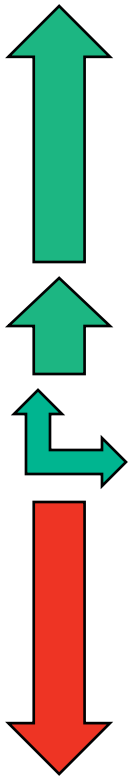
October 4, 2011

Executive Summary of Trends

- Farm Production
- Farm Income
- Farm Costs
- Fertilizer Demand
- Pesticide Demand
- Number of Farms
- Farmland
- Farm Economies of Scale



When Limited Supply Meets Expanding Demand

- Three Basic Components to Ag Supply
  - land, water, fertilizer
  - only fertilizer could expand to meet demand
- Basic Components to Demand
  - population, income, and urban development
  - all three are increasing worldwide
- Major Impact on Western Agriculture (AZ, CA, HI)
- Greater Efficiency and Innovation from Industry

Production and Prices Increase

- Result: Ag Production and Output Should Grow
- Result: Ag Prices Should Rise
  - until supply catches up with demand
  - expect increasing farm income and costs
- Trends are Structural, Temporary, and Irrelevant
  - land supply for ag is flat or declining
  - water supplies are tight and subject to restrictions
  - fertilizer and chemical production could grow
  - policy tends to address irrelevant issues

Trends Cut Both Ways

- Take Long View
  - 5 to 20 years
- Represent Opportunities and Threats (Risks)
  - farmers and industry must prepare for both
  - strategies to adapt and innovate required
- Trends Are a Mixed Bag
  - some good for farmers and industry
  - some good for farmers but not industry

Output Needs to Grow by 70%

- Growing Demand for Ag Products
  - originating overseas (China and India)
  - driven by global population and income growth
  - population increase of 28.5% by 2050
  - income increase even more dramatic
  - food production to increase by 70% to keep up
- Western Ag and Industry Need Strategies
  - one or two of these trends will be critical to you
  - focus resources and action

Production Trends in California

- Shift Towards High Value, Specialty Products
  - top 10 crops, value gained (2008 - 2009)
    - Kiwi**, Blueberries, Safflower*, Plums*, Prunes**, Walnuts**, Dry Beans*, Nectarines*, Aquaculture, Pecans
  - top 10 crops, value lost (2008 - 2009)
    - Cotton*, Hay*, Oats, Miscellaneous Fruits and Nuts, Wool, Honey, Avocados*, Milk*, Other Berries, Olives*
- Focus on Competitive Advantage

*CA leading producer **CA sole producer Source: CDFA

Ag Exports Driving Growth

- Top Export Markets (2009)
  - Canada, EU, Japan, China, and Mexico
- China Expected to Grow in Importance
  - CA ag exports at $986 million in 2009
  - 34% growth 2008 - 2009
  - fasting growing exports (over $15 million in value)
    - walnuts, almonds, pistachios, wine, lemons
  - shrinking exports (over $15 million in value)
    - dairy, beef, cotton

Source: CDFA

Consolidation of Farming Operations

- Total Number of Farms in CA Down 1.9%
  - 2000 – 83,100 farms; 2009 – 81,500 farms
- Average Farm Size Down 10.1%
  - 2004 – 347 acres; 2009 – 312 acres
- One Area of Growth – Farms with Annual Sales in Excess of $500,000
  - 2000 – 11,080,000 acres
  - 2009 – 12,100,000 acres
  - up 9.2% over ten years

Source: CDFA

Small and Mid-Size Operations Cannot Capture Economies of Scale

- Small Farms
  - numbers static; smaller acreage
- Largest Farms
  - growing more numerous and with more acreage
- Declining Economies of Scale
  - squeezing profits at smaller operations
  - mid-sized operations feeling pinch
- Ops Less Than 160 Acres Could Disappear
  - in some sectors

Farm Finances Changing

- Farms Tend to Manage Revenues, Not Costs
  - costs taken for what they are
  - more focus on volatile revenues
- Farm Credit System Uncomfortable
  - legacy of financial crisis and credit crunch
  - decline of federal farm subsidies creates more volatility in revenues
  - new credit risk management standards

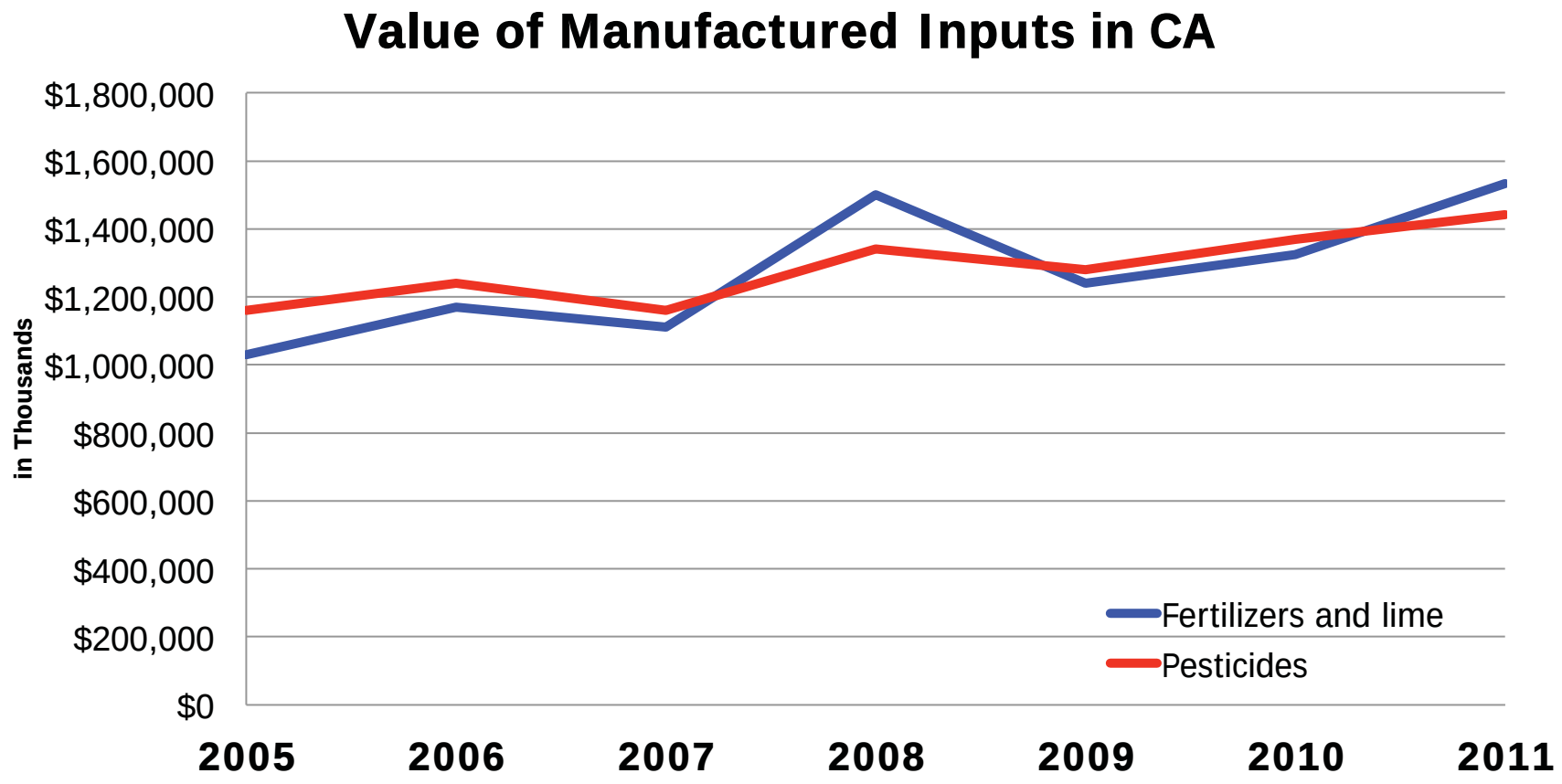
Managing the Margin

- Result: Farms Will Manage Margins Better
  - manage volatility of revenues and costs
  - stabilize profit margins at some acceptable range
  - otherwise, credit will be harder to acquire
- Farms will Become More Cost Sensitive
  - more input needed to meet additional demand
  - reluctant to let costs eat into margins
- Farms will Become More Efficient
  - demand same from suppliers

Ag Chemicals Industry Expectations

- Pesticide Demand Flat or Slightly Rising
  - ag biotechnology could decrease demand
- Growing Demand for Fertilizer
  - originating domestically
  - emphasis on innovative products and methods
- Higher Prices Not Necessarily Result
  - increased competition from less expensive imports
  - Western farmers will demand more efficiency

Trends Affecting Western Agriculture



Source: USDA and CDFA

Implications for Ag Chemical Industry

- Industry Could be Squeezed
  - higher input costs (phosphorus and energy)
  - more difficult to raise prices and pass along costs
- To create value for customers
  - industry will need to better manage margins
  - increase efficiencies and productivity
  - share economies of scale with customers
  - better manage risks (commodities, financial, market) – yours and theirs

More is Not the Answer

- Need to Produce 70% More Food
  - world population rising 1% a year
  - yields need to grow 1.5% a year
    - currently 0.5% to 1.0% (less than half 1960 to 1990)
  - disease and pests continue to be problems
  - fertilizer input costs remain very high
    - phosphorus and energy costs
  - more land, water, fertilizer cannot do it
- Part Answer: Greater Efficiency Through Ag BioTech

Source: *The Economist*

Ag BioTech is Part of Answer

- Ag Biotech Beginning to Take Off
  - model of medical biotech (JHU a pioneer)
    - IPR belongs to researchers
  - alliances between industry and universities
    - IPR shared by researchers and companies
- Early Yield Benefit to Staples
  - precise and faster breeding of wheat, corn, rice
  - corn most successful in terms of increasing yield
  - benefits will spread to specialty crops

Source: Dr. David Zilberman, UC Berkeley

Research Shows Benefits are Up

- Environmental Benefits
  - carbon sequestration (result of no-till methods)
  - reduced pressure on ag land and expansion
  - weed control and abatement
  - farming more productive with fewer inputs
    - mitigate and relieve negative “externalities”
- Best Results Expected Where:
  - pests are a real problem
  - fertilizer use is low or ineffective

Source: Dr. David Zilberman, UC Berkeley

Research Shows Costs are Down

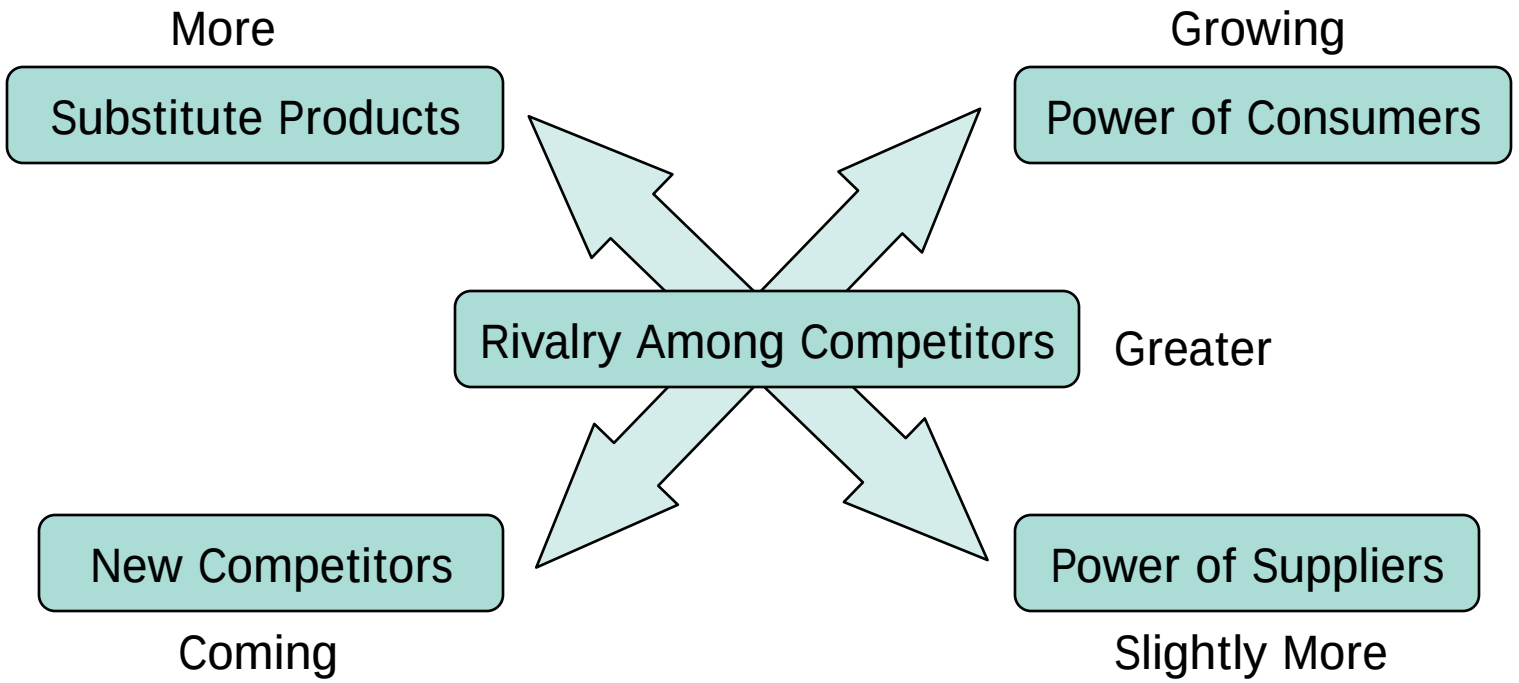
- Genetic Data Getting Cheaper to Acquire
- Economic Benefits
  - higher output prices; lower input prices
  - increasing crop yields
  - improves effectiveness of double cropping
  - improves Integrated Pest Management
    - reduces losses to insects and pests
- Some Signs of Increased Fertilizer Use

Source: Dr. David Zilberman, UC Berkeley

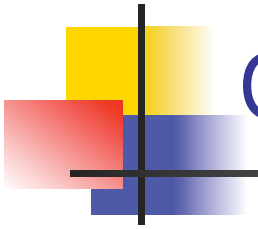
Strategic Implications for Industry

- Prepare to Adapt and Change
  - in other words, research, develop, innovate
- There Will be Failure; Risk Taking Required
  - small scale failure (no catastrophes), fail quickly, learn, move on
  - risk management more important than ever
- Changing Customer Mix; New Product Mix
  - innovation creates value
  - share benefits with customers
  - share risks with customers, too

Back to Basics: Porter's Five Forces Model



Source: Dr. Michael Porter, Harvard University



Get Ready for the Competition

- Focus on Competitors
  - your success depends on blocking their strategies
  - their success depends on blocking you
- Develop Good Strategies
- Examine Your Competitive Advantages
  - re-evaluate existing advantages
    - how will they do under new circumstances?
  - extend the good ones
  - create new advantages where possible

Invest in Strategic R & D, Productivity, and Risk Management

- Target Ag BioTech Activities
  - beef up internal R & D function
  - develop alliances with research universities
- Focus on Productivity and Efficiency
  - be prepared to share any benefits with customers
- Enterprise Risk Management Strategies
  - operations, commodities, financial, currency
  - improve risk analysis (include real options)

Create Good Strategies

- Nothing Easier to Concoct than Bad Strategy
  - bad strategy chases out the good
- Good Strategies are Effective
  - diagnose problems, manage challenges, define actions
- Healthy Trees Yield Good Fruit
  - strategy is the fruit of a process
  - if strategy is important; process is more important

Contact Information

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